INFORMATION ABOUT THE BROMUS DATABASE WEB INTERFACE

SPECIES INFORMATION

INFORMATION AT THE TOP OF THE SPECIES PAGE

Scientific Name
All species in the database are commonly included in the Poaceae tribe Bromeae. Most species are commonly included in the genus *Bromus*. Other species in tribe Bromeae are *Boissiera* and *Littledalea*. However some taxonomists may place some of the species typically include in genus *Bromus* in genera *Anisantha*, *Bromopsis*, *Ceratochloa*, *Neobromus*, and *Nevskiella*.
Species included in the database are based on the species included in ITIS (the Integrated Taxonomic Information System) at http://www.itis.gov for species found in the western hemisphere, and on the species included in the Kew Gardens GrassBase –The Online World Grass Flora at http://www.kew.org/data/grasses-db.html.

Section
The sections used are based on the sections described in "Taxonomy and nomenclature of the Brome-Grasses (Bromus L.s.l)" by Philip. Smith (1970) and on the subgenera listed in "Chromosomes and Evolution in Bromus" by G. Ledyard Stebbins, Jr. (1981).

Subspecies
Many subspecies listed are based on subspecies listed in ITIS (the Integrated Taxonomic Information System) at http://www.itis.gov or on subspecies listed in the Species 2000 Catalogue of Life 2011 Annual Checklist at http://www.catalogueoflife.org/search/all. Other sources used are included in the citation list.

Variety
Some varieties listed are based on varieties listed in ITIS (the Integrated Taxonomic Information System) at http://www.itis.gov or on varieties listed in the Species 2000 Catalogue of Life 2011 Annual Checklist at http://www.catalogueoflife.org/search/all. Other sources used are included in the citation list. There are many varieties of brome species and only a few are included in the database at this tim

Authority
The authority is the name of the author who published an initial description. If the taxonomy has changed, the previous authority is shown in parentheses and is followed by the current authority. The term "ex" indicates that the author did not meet the criteria for a valid publication, but the name was subsequently used by another author in a valid publication.

Common Names
The common name field contains a list of English common names based on multiple sources.

Synonyms
The synonym field contains a list of other scientific names which are used for the same species, subspecies, or variety. These may or may not be considered valid scientific names, and are based on multiple sources including the ITIS database at http://www.itis.gov and the Tropicos database at http://www.tropicos.org. The Advanced Search option may be used to find valid species names. Select the Synonym field and the "contains" option to search for all or part of a name.

ITIS Number
The ITIS Number is the identification number of the species in ITIS (the Integrated Taxonomic Information System) at http://www.itis.gov (for western hemisphere species). This link bring up the species page in ITIS and is useful for finding additional information about taxonomy.

GrassBase Number
The GrassBase number is the identification number of the species in the Kew Gardens GrassBase database at http://www.kew.org/data/grasses-db.html. This link bring up the species page in ITIS and is useful for finding morphological descriptions and other information contained in GrassBase.

Lifecycle
The lifecycle field describes the timeframe and seasons in which a plant grows and reproduces.

Values are

- Annual
- Winter Annual
- Spring/Summer Annual
- Biennial
- Short-lived Perennial
- Perennial

In some cases, the same value may show up multiple times, when multiple sources have been used for this information. To see references for Lifecycle values, go to the Species Traits/Properties Tab.

IMAGES TAB

Most images are made available by links to the website on which the image is hosted. In most cases, usage information for images should be obtained from the hosting website. Some images are hosted on the *Bromus* Database server, and image usage information is provided.

Caption
The Images Caption field contains the species name and a brief description of life stage or detail shown in the image.

Citation
The Images Citation field provides information about the photographer, organization, and/or copyright information if available.

Image Year
This Image Year field contains the year that the image was taken if this information is available.

Webpage
If the image is provided by linking to an image on the web, the Image Webpage field contains a link to the original web page.

Other Information
The Other Information field is used to provide additional information or comments about the image.

Image Use
The Image Use field is used to provide information about usage of the image.

DISTRIBUTION TAB

Native Range

The information in the Distribution Native Range field was compiled from information collected for the range maps and is based on many sources. The evaluation of native range versus current range is based on information about native/alien status provided by some of the sources, and by type specimen information.

Current Range
The information in the Distribution Current Range field was compiled from information collected for the range maps and is based on many sources.

Distribution Rank
The Distribution Rank is used to provide a rough estimate of how much a given species has spread due to human intervention. The values are

0=Undetermined
1=Restricted to one or a few locations within a limited area, or believed to be extinct in the wild
2=Restricted to a moderate to large native range
3=Found outside of native range in native biogeographic realms or no more than one additional biogeographic realm
4=Naturalized in two biogeographic realms outside of native range
5=Naturalized in three or more biogeographic realms outside of native range

Native Ecoregions
Native Ecoregions are based on WWF (World Wildlife Fund) Ecoregions, and are based on information collected from multiple sources including those used for the range maps.
Values are

Afrotropical
Antarctic
Australasia
Indo-Malay
Nearctic
Neotropic
Oceania
Palearactic

Current Ecoregions
Current Ecoregions are based on WWF (World Wildlife Fund) Ecoregions, and are based on information collected from multiple sources including those used for the range maps.
Values are

Afrotropical
Antarctic
Australasia
Indo-Malay
Nearctic
Neotropic
Oceania
Palearactic

Map of Distribution
The map and Location Information Table shows countries that are known to contain the species. Colors indicate whether or not the species is believed to be native in the political region based on information provided by sources used.

Although an entire country is colored if sources indicate that a species is present in the country, the species may grow only in a small area within the country. For large countries such as Russia and China, especially, there may be additional information about location within the country in the Comments field of the Location table.

Location Information Table
Location Information Table contains additional information by country. There is also information for US states and Canadian provinces. Species are categorized as Native, Not Native, or Unknown. Information on native status is often not included in sources, and often conflicts when it is provided. The absence of information a species in a given country or state does not mean that it is not there, only that no source of information was found saying that it is found in the state or country.

Native - Sources indicate that the species is native. This status may also be used for the country in which a type specimen was collected.

Not Native - Sources indicate that the species is introduced.

Unknown - Sources do not provide information on native/introduced status or sources provide conflicting information.

Status
The Location Status field contains information (if available) about native/non-native status of a species. It also includes the source of the information. If a reference is listed without status information, the reference lists the species as being present, but does not clearly specify whether or not the species is native.

Regulations
The Location Regulations field contains information about governmental regulations that apply to the species within the country, state, province, or other region.

Impact
The Location Impact field describes environmental, agricultural, or economic issues caused by the species in the country, state, province, or other region.

Management
The Location Management field contains information about types of management used within the political region.

Comments
The Location Comments field contains additional information (often range or habitat information) about the behavior of the species in the country, state, province, or other region.

INTRODUCTION INFORMATION TAB

Location
The Introduction Location field gives the country, state, province or other political region in which a known introduction of a species took place.

Time
The Introduction Time field gives the year of the introduction. If the year is approximate, this is noted in parentheses.

LocationInfo
The Introduction LocationInfo field provides more specific location information about the introduction if this is available.

Evidence
The Introduction Evidence field provides references or other information about the evidence for the introduction of a species.

Details

The Introduction Details field contains additional information about the introduction such as the purpose and/or mode of introduction.

Purposeful
The Purposeful field contains the values:

Yes – the species was introduced for a specific purpose
No – the species was introduced accidentally
Unknown – it is not known if the species was introduced for a specific purpose

References
The References field lists references for the introduction information.

SPECIES TRAITS/PROPERTIES TAB

NUMERIC TRAITS

Minimum Awn Length
The Minimum Awn Length shows the minimum length of the lemma awn as a decimal value in millimeters. This information comes from the Kew Gardens GrassBase database (Clayton, W. D., Harman, K. T. And Williamson) and occasionally from other sources.

Maximum Awn Length
The Maximum Awn Length shows the maximum length of the lemma awn as a decimal value in millimeters. This information comes from the Kew Gardens GrassBase database (Clayton, W. D., Harman, K. T. And Williamson) and occasionally from other sources.

Maximum Culm Length
The Maximum Culm Length shows the maximum culm length as an integer value in centimeters. This information comes from the Kew Gardens GrassBase database (Clayton, W. D., Harman, K. T. And Williamson) and occasionally from other sources.

Minimum Temperature
The Minimum Temperature field shows the minimum temperature at which the species is likely to survive and grow as an integer value in degrees Centigrade.

Max Temperature
The Maximum Temperature field shows the maximum temperature at which the species is likely to survive and grow as an integer value in degrees Centigrade.

Minimum pH
The Minimum pH field shows the minimum pH at which the species is likely to survive and grow as an decimal value.

Maximum pH
The Maximum pH field shows the maximum pH at which the species is likely to survive and grow as an decimal value.

Specific Leaf Area
The Specific Leaf Area field shows the specific leaf area (a measure of leaf thickness – leaf area divided by dry mass) as a decimal value.

Root to Shoot Ratio
The Root to Shoot Ratio field shows the ratio of roots to the above-ground portion of a plant as a decimal value.

Seeds per Shoot/Ramet

The Seeds per Shoot/Ramet field shows the number of seeds produced by an individual plant or ramet as an integer value. In some cases, low and high values from the same source are included in the database.

Thousand Seed Weight
The Thousand Seed Weight field shows the weight of a thousand seeds in grams (or of one seed in milligrams) as a decimal value. In some cases, low and high values from the same source are included in the database.

Basic Chromosome Number
The Basic Chromosome Number field shows the number of chromosomes in a single set as an integer value.

Ploidy Level
The Ploidy Level field shows the number of sets of chromosomes most commonly found in somatic cells.

Total Chromosome Number
The Total Chromosome Number field shows the total number of chromosomes most commonly found in somatic cells.

Genome Size
The Genome Size field shows the size of one copy of the genome (1C) value as measured in picograms.

C3/C4
The C3/C4 field shows the type of photosynthesis used by the species.

Values are
- C3
- C4

Asexual Reproduction
The Asexual Reproduction field shows the types of asexual reproduction used by the species.

Values are
- Apomixis
- No Rhizomes
- Rhizomes
- Stolons/Runners

Mating System
The Mating System field contains information about whether the species self pollinates or outcrosses.

Values are
- Selfing Only
- Mostly Selfing
- Selfing and Outcrossing
- Mostly Outcrossing
- Outcrossing Only

Seed Dispersal
The Seed Dispersal field contains information common types of seed dispersal used by the species.

Values are
- Animal External
- Animal Internal
- Seed/Mulch
- Vehicles
- Water
- Wind

Seed Bank
The Seed Bank field contains information about how long seeds are likely to remain alive in the soil.

Values are
- Long-term Persistent (5+ years)
- Short-term Persistent (1 to 5 years)
- Transient (less than 1 year)

Ploidy Level (multi-choice field)
The multi-choice Ploidy Level field shows whether the species is diploid or polyploid. In some cases, both diploid and polyploid individuals may exist, so both values may be shown.

Hybridization
The Hybridization field contains information about whether or not hybridization is known to occur.

Values are
- Is a Hybrid
- Known Hybridization
- No Known Hybridization

Hybridization Info
The text Hybridization Info field contains additional information about known instances of hybridization.

HABITATS

Global Biomes
The Global Biomes field shows types of biomes in which the species grows. It uses a list of biomes developed by the WWF (World Wildlife). The values are:
- Boreal Forests/Taiga
- Deserts and Xeric Shrublands
- Flooded Grasslands and Savannas
- Lakes
- Mediterranean Forests, Woodlands, and Scrub
- Montane Grasslands and Shrublands
- Temperate Broadleaf and Mixed Forests
- Temperate Coniferous Forests
- Temperate Grasslands, Savannas, and Shrublands
- Tropical and Subtropical Moist Broadleaf Forests
- Tropical and Subtropical Dry Broadleaf Forests
- Tropical and Subtropical Coniferous Forests
- Tropical and Subtropical Grasslands, Savannas, and Shrublands
- Tundra

Soil
The Soil field shows the types of soil in which a taxon is likely to grow. Values are:
- Coarse
- Medium
- Fine

Shade Tolerance:
The Shade Tolerance field shows the level of shade tolerance associated with the taxon Values are
- Low
- Medium
- High

Drought Tolerance:
The Drought Tolerance field shows the level of drought tolerance associated with the taxon. Values are:

Low
Medium
High

Salt Tolerance:
The Salt Tolerance field shows the level of salt tolerance associated with the taxon. Values are:

Low
Medium
High

Preferred Moisture Level
The Preferred Moisture Level field shows the level of salt tolerance associated with the taxon. Values are:

Dry
Medium
Moist/Wet

Habitat
The Habitat field contains a text description of habitats in which the species grows.

INTERACTIONS WITH OTHER ORGANISMS

Organism
The Organism Type field contains a general description of the type of organism that interacts with the *Bromus* species. The values are:

Amphibian
Annelid
Arthropod
Bacterium
Fungus
Mammal
Mollusc
Nematode
Phytoplasm
Reptile

Kingdom:
The Kingdom field contains the kingdom of the organism that interacts with the *Bromus* species.

Phylum:
The Phylum field contains the kingdom of the organism that interacts with the *Bromus* species.

Class:
The Class field contains the kingdom of the organism that interacts with the *Bromus* species.

Order:
The Order field contains the kingdom of the organism that interacts with the *Bromus* species.

Family
The Family field contains the kingdom of the organism that interacts with the *Bromus* species.

Common Names

The Common Names contains common names that are typically used for the organism that interacts with the *Bromus* species.

Other Names
The Other Names taxonomic synonyms that are commonly used for the organism that interacts with the *Bromus* species.

Interaction:
The Interaction field contains information about the interaction between the organism and the *Bromus* species.

HUMAN INTERACTIONS TAB

Association with Disturbance:
The Association with Disturbance field contains information about types of disturbances that are associated with *Bromus* species.

Values are:
- Fire
- Flood
- Grazing / Overgrazing
- Mining
- Off-Road Vehicle Damage
- Roadsides / Waste Places / Old Fields

Human Association
The Human Association field contains information about ways that humans use *Bromus* species.

Values are:
- Cover Crop
- Development of Named Cultivars
- Floral Arrangements
- Food (Human)
- Forage – Pasture / Range
- Hay
- Horticulture
- Mine Rehabilitation
- Restoration
- Soil Stabilization / Revegetation
- Turf / Lawns
- Wildlife Conservation

Grazing Value:
The Grazing Value field contains information about the value of the species as food for livestock.
Values are:
- Low
- Medium
- High

Impact:
The Impact field contains information about environment changes associated with this species both in its native range and as an introduced species. The use of the term 'weed' means that the species grows in places where humans do not want it to grow.

Values are:
- Allelopathy

Carries Pests or Diseases
Crop Weed
Change to Fire Cycles
Change to Nutrient Levels
Change to Soil
Change to Water Levels
Damage to Livestock
Damage to Natural Communities
Damage to Wildlife
Transformer Species
Weed in Disturbed Areas
Weed in Natural Areas

Impacts:
The Impacts text field provides more detailed information about issues associated with this species.

Management:
The Management text field provides more detailed information about use and cultivation of the species and also about management and restoration of areas damaged by the species.

COMMENTS TAB

Comments
The Comments field contains additional information about the *Bromus* species.

CITATIONS/REFERENCES TAB

This tab contains a list of references that were used to collect information about the species of *Bromus* for the database. There is an option to bring up a larger list of references for the species including those that were not cited or used in the population of the database. Please see the Bibliography section for an explanation of fields for references information.

BIBLIOGRAPHY

The Bibliography contains a list of references, including scientific papers, government documents, theses and dissertations, online databases, other websites, articles, and other sources of information. Many, but not all of the references have been cited in the database. The Advanced Search option can be used to find references that meet a specific set of criteria. Tabs are used to organize the references by format.

ID
The ID field contains a database identification number.

Reference Type
The Reference type field contains one of the following values:
Blog
Book
Book Section
Computer Program
Conference Proceedings
Dissertation/Thesis
Electronic Article
Government Document
Journal Article

Magazine Article
Manuscript
Map
Newspaper Article
Online Database
Online Multimedia
Pamphlet
Personal Communication
Report
Unpublished Work
Web Page

Title
The Title Field contains the title of a journal article or other document or of a database or website.

Author
The author field contains information about the author or authors.

Year Published
The Year Published field contains the year in which a document or paper is published.

Journal
This field usually contains the name of a journal in which an article is published. It may also be used for the name of a book consisting that contains a collection of papers.

Volume
The Volume field contains the volume of a journal in which an article is published.

Issue
The Issue field contains the Issue of a journal in which an article is published.

Pages
The Pages field contains information about the page numbers of a paper in a journal or in a book.

Organization
The Organization field provides information about government agencies, universities, or other organizations where the organization is responsible for development and deployment of a reference. It is not generally used to provide information about funding.

Abstract
If an abstract for a paper is available, it is provided in the Abstract field.

Keywords
Author keywords are provided in this field. Additional keywords are not used.

Study Location/Habitat
The Study Location/Habitat field provides information about locations where field studies were conducted. It may also include information where specimens were collected for other types of studies.

Primary Species
The Primary Species field provides a list of species that are the focus of the research or information in the reference.

Other Species
The Other species field provides a list of some other species that are involved in a study or discussed in the paper. Not all species mentioned in the paper are listed.

Study Time Period
The Study Time Period contains information about the time period during which a study was conducted.

Funding Sources
The Funding Sources field provides information about funding for the research discussed in a paper or funding for support of a website or other resource.

Inline Citation
The Inline Citation field provides information about how a resource is cited in the database.

URL
The URL field is used to provide a URL for resources. This field is used primarily for papers and documents that are freely available on the internet without a subscription, for online databases (including a few where a free or paid registration is required), and for other online resources.